

Reception charcoal from woodwaste in ecologically pure process

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The possible size of wood use in the Leningrad area is evaluated in 9,6 millions m³ of timber annually. Anyway the share of stem wood is only 50-60% in the content of the biomass of a tree. Bark -10-15 %, branch, tops, leaves (needles) - 5-16 %; roots - 8-12 %; stumps - 3-5 % are the rest.

Till now record keeping of a wood resources is carried on stem wood only, it means that 40-50% biomass of a tree is not taken into account at all and practically is not used. Thus potential padding resources of unused wood raw material could constitute about 4-5 million m³ annually, including low-grade wood - 2-3 million m³; barks - 1,5-2,0 million m³; wood greenery (needles,) - 0,5-1,0 million m³. Almost all these components could be considered as biofuel - iterated raw material for power and power chemical purposes.

Usage of a thermal energy, which is worked out at incineration of wood wastage, will allow considerably to save money, and also to receive economic advantages from improvement of a drift behind a forest, from environmental sanitation, from making new jobs. If the saleable products are received simultaneously with energy, the efficiency of biopower production will increase even more.

There is a backlog demand on charcoal. Russia in the best periods manufactured about 300000 tons/year of charcoal, now on approximated counts about 50000 tons/year. At revitalising of economy, the Russian market could consume charcoal in hundred times more than now. But the demand grows and today on domestic market import charcoal already has appeared. The businessmen attempt to fill a deficit at the minimum investments. It influenced distribution of primitive plants. They are cheap, but their principal defect is exhaust of steams and gases in a surrounding area. Phenols, methanol, acetic acid and other substances contained in them and make harm on the nature and people. Because of ineffective organisation of a thermal condition many firewood is spent for heating and the flue gas containing carbon oxid appeared in the air. The fluid products are fractionally condensated and get into the ground. The enclosing forest within several years dries up, and the people suffer from professional diseases. The new charcoaling is indispensable. For realisation of this aim we developed pyrolysis plants of a new type. They use a wood wastage, non-commodity timber, wastage of wood saw and wood processing as raw material. Thus production is ecologically net and the production prime cost is minimum.

At a choice of productivity of the simple kiln we consider expedient to restrict an amount of wastage which is kept near the plant to avoid expenses on carriage of firewood.

The plant designed from Department of technology of Forest Chemical Products and Biological activity Substances St.-Petersburg State Forest Technical academy has received a title of "POLIKOR". It satisfies to modern requests on ecological and technological indicators, it is easy in working and is oriented on producing of saleable charcoal from wood wastage. The first plant of the "POLIKOR" set (fig. 2) is put in maintenance in May 1999 near Vyborg (Leningrad area). Second, twice greater power - "POLIKOR-2" (fig. 3) is constructed in Priozersk also put in maintenance in November 2000. The trials of the first plant have shown, that it is controlled and can work in different temperature schedules from 450 up to 650⁰C. At usage of aspen with moisture more than 50 % as raw material, the relative productivity of charcoal constitutes in count 23-26 tons/month; at usage the productivity about 45 tons/month is air of dry birch firewood, on coniferous firewood the productivity depends on moisture. At processing coniferous wood

by moisture 45-55% the productivity constitutes up to 25 tons of charcoal per month, at processing of dry trees about 35 tons/month. High quality charcoal manufactured from a wood wastage is reached for the first time. On designed technique, the charcoal with a miscellaneous degree carbon and distinguishing on other indicators can be manufactured depending on requests, presented by the consumers. In all cases the charcoal conforms the requirements of the customers. The manufactured charcoal is on demand. Now majority of the manufactured charcoal is delivered on export.